FINANCIAL PERFORMANCE OF

THE BRITISH COLUMBIA SALMON FLEET

1986 - 1990

PREPARED BY

THE PROGRAM PLANNING AND ECONOMICS BRANCH

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1. INTRODUCTION

The purpose of this report is to assess the financial performance of the B.C. Salmon Fleet during the period 1986 - 1990. The B.C. salmon fishery in one of the most valuable fisheries in the world, and certainly the most valuable in British Columbia. In 1990 the total landed value exceeded $279 million. The period under review is one of record high value and catch for the salmon fleet.

This document is an update of the publication "British Columbia Salmon Fleet Financial Performance 1981-1985", updating the information for the period 1986-1990. It is based on data from the 1985 and 1988 Surveys of Pacific Costs and Earnings, which collected information on vessel activities, earnings from fishing, income sharing arrangements and operating costs. The 1985 survey sampled only licensed salmon vessel owners, whereas the 1988 survey was extended to include a sample of all licensed vessel owners (salmon and non-salmon). Vessel owners' cooperation in completing this survey is greatly appreciated.

This report was prepared by Stuart Kerr of the Program Planning & Economics Branch and is based largely on the preceding report: "British Columbia Salmon Fleet Financial Performance 1981-1985" prepared by the DPA Group for the Department.

The information in this report is used by the department and other related industry institutions in economic and financial studies. These data are used frequently by DFO in various projects, such as salmon stock management plans, licensing options analyses and benefit/cost analyses.

Throughout this report 1988 results are used for comparison with other years since 1988 is the most recent survey.

2. Overview of the Salmon Fleet since 1969

The British Columbia salmon fleet is one of the world's most advanced fishing fleets. The composition of the fleet and ownership arrangements have changed modestly since the early 1980s. Landings, earnings and level of investment, however, have varied significantly over the last decade.

Composition of the Fleet

There are four main types of vessels:

- Seine vessels are generally 40 - 75 feet (12 - 23 meters) long and have a five-person crew, including the captain.

- Gillnet vessels are 25 - 40 feet (7.5 - 12 meters) long. Approximately half the B.C. gillnet vessels are operated by a single person, while the remainder utilize a deckhand in addition to the operator.

- Gillnet-troll combination vessels utilize both gillnet and troll gear. The most common operations are vessels which primarily fish with gillnets, but also use troll gear for a part of the season.

- Troll vessels vary from 25 - 60 feet (7.5 - 18 meters) in length. The troll fleet is made up of a wide range of vessels in terms of size and level of capital investment. The fleet includes small inshore "dayboats", larger, more mobile "ice boats" and "freezer boats". The average crew size is two, including the captain, except for the inshore day boats which are operated by a single person.

The report therefore deals with four vessel types: seine, gillnet, gillnet-troll and troll. In 1990, 4508 vessels reported salmon landings. The salmon fleet consisted of:

- 536 seine vessels;
- 1787 gillnet vessels;
- 978 combination gillnet-troll vessels; and
- 1207 troll vessels.

Many of the salmon vessels fish species other than salmon, such as herring, halibut, groundfish and shellfish.

The size, structure and technical sophistication of the British Columbia salmon fleet changed markedly after 1969 when limited-entry was introduced in an effort to control excessive expansion of fishing capacity, but the rate of change has slowed significantly in the 1980s. As shown

in Figure 1, the number of vessels reporting salmon landings declined modestly from 4,563 in 1981 to 4,508 in 1990. The composition of the fleet has also changed slightly. The number of seine vessels fishing for salmon decreased from 538 in 1981 (12% of the fleet) to 536 in 1990. Previously the growth of the seine fleet (from 370 vessels in 1969) was a result of conversion of gillnet and troll tonnage into new seiners and the granting of new salmon licences through the appeals process.

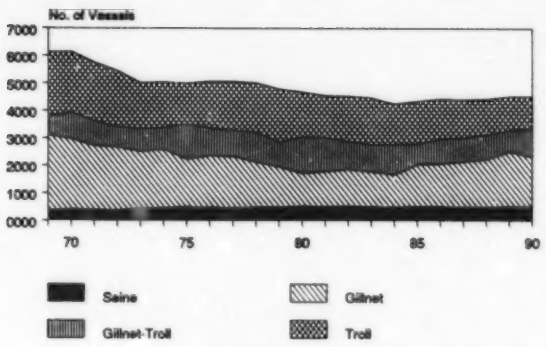


FIGURE 1: COMPOSITION OF THE SALMON FLEET, 1969-1990

The number of gillnet and troll vessels declined through the 1970s because of their conversion through "pyramiding" licensed vessel tonnage into larger seiners and because of their withdrawal under the buy back program of 1971 to 1974.

A trend which began in the 1970s was the increasing number of vessels carrying both gillnet and troll gear. This reflected the desire of many operators to increase and diversify fishing opportunities in light of greater restrictions on fishing. The trend to combine gillnet-troll vessels levelled off by 1985.

Many salmon vessels also fish roe herring and other species. In 1988, 146 of the 522 salmon seine vessels fished herring using seine gear. A further 61 vessels combined fishing salmon using seine gear with fishing herring using gillnet gear. Over 330 vessels in the gillnet, troll, and gillnet-troll fleets also fished herring using gillnets. Over 350 salmon vessels fished halibut.

Landings and Earnings

Figures 2 and 3 illustrate the changing volume and value of commercial salmon landings since 1969. Prices and volume of landings have varied widely making the salmon fishery particularly volatile. The volume of the commercial salmon harvest had varied three-fold since 1969, from a low of 38,000 tonnes in 1975 to a high of 108,000 tonnes in 1985 (Figure 2). The 1985 harvest was the largest in over 30 years.

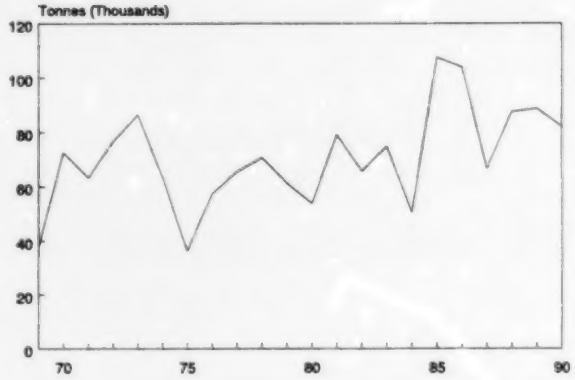


Figure 2: Salmon Landings, 1969-1990

Since 1969, total gross fishing income of salmon vessels from all species increased nine-fold to $428 million in 1988. Since then, however, it dropped to $363 million in 1989, and then rose modestly to $381 million in 1990 (Figure 3).[1] During the 1970s prices for salmon increased markedly. As a result, the landed value of salmon increased faster than the landed weight (volume). Prices levelled off in the early 1980s with a greater proportion of the catch made up of low-value pink salmon, coupled with modest landing levels. Prices for salmon were volatile during the mid to late 1980s with prices peaking in 1988 and declining thereafter. Total salmon landed value declined from $178 million in 1979 to $125 million in 1983 despite an increase in volume caught (again due to a high pink catch). By 1985, though, salmon landed value had rebounded to $243 million due to increased prices and landings. Salmon landed value in 1987 dropped slightly below the 1985 level, but the landed value of all species caught by the salmon fleet has not fallen below the level recorded in 1985.

[1] *All landed value figures include bonuses but exclude packing and direct delivery payments.*

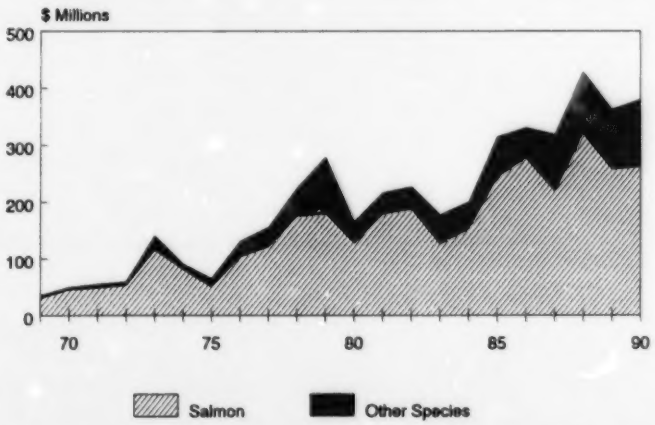


Figure 3 - Salmon Fleet Landed Value of All Species, 1969 - 1990

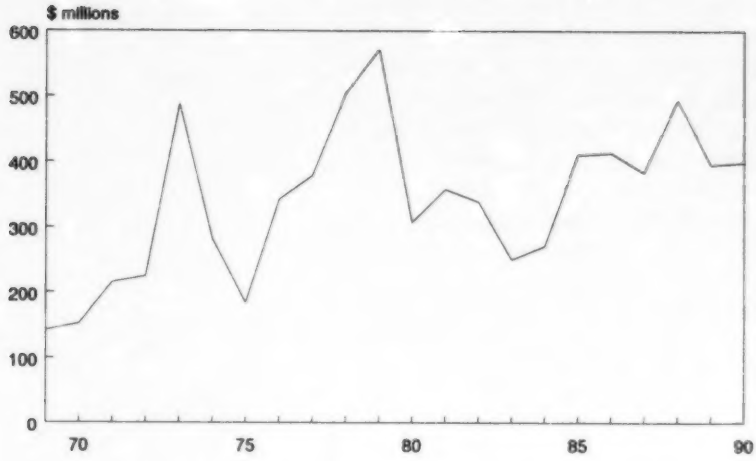


FIGURE 4 - LANDED VALUE EXPRESSED IN CONSTANT 1991 DOLLARS

Over the 1981 to 1990 period, species other than salmon, and especially roe-herring, have increased in importance as a source of income to the salmon fleet. In 1990 the salmon fleet earned an estimated $120 million from herring, groundfish, and other species. Salmon fishing accounts for 65% of gross income for the fleet. The breakdown of the $391 million total gross income of the fleet in 1990 was:

- $261 million salmon income;
- $57 million herring income;
- $63 million income from other species; and
- $10 million from other related activities.

Fishing income was $381 million.

The early 1980s was a period of high inflation in Canada. Much of the growth in landed value of the salmon fleet in Figure 3 can be attributed to general price increases. Figure 4 shows landed value of the salmon fleet adjusted for changes in consumer prices (landed value is expressed in constant 1991 dollars).[2] During the 1970s real landed value of the fleet showed an upward trend and reached a peak of over $570 million in 1979. Over the next ten years real landed values averaged only half of the 1979 level. In 1985 real landed value rebounded to $409 million and rose to $493 million in 1988. The last five years of the 1980s have been relatively stable and well above the average for the early 1980s.

[2] *For example, between 1969 and 1991 consumer price levels in Canada increased by 317%. Therefore, the $34 million landed value of the fleet in 1981 is equivalent to $142 million expressed in real or inflation adjusted 1991 dollars.*

There is a wide distribution of income, both between vessel types and within vessel types. For example, in 1988 average gross income per vessel was $100,000, but 76% of the vessels in the fleet earned less than this, as shown in Table 1. Gross incomes of seine vessels generally are much greater than those of gillnet, troll and combination gillnet-troll vessels. This reflects the level of investment and crewing involved.

	Vessel Type				
Gross Income Range	Seine	Gillnet	Gillnet-Troll	Troll	Total
< $10,000	0%	6%	1%	8%	5%
$10,000 - 19,999	1%	12%	6%	6%	7%
$20,000 - 49,999	0%	43%	26%	31%	31%
$50,000 - 99,999	5%	33%	48%	32%	33%
$100,000 - 149,999	16%	4%	11%	14%	10%
$150,000 - 199,999	12%	1%	2%	3%	3%
$200,000 plus	66%	1%	6%	6%	11%

TABLE 1: DISTRIBUTION OF GROSS FISHING INCOMES (PER VESSEL), 1988

OWNERSHIP ARRANGEMENTS

Ownership arrangements in the fishing industry vary considerably. The most common for the gillnet, troll, and gillnet-troll fleet is an owner-operator arrangement where the owner of the vessel and equipment also operates the vessel.

Ownership and operation arrangements for seine vessels are more varied. For many seiners, including processing company-owned vessels, the captain operates the vessel and provides the net. A company or separate entity other than the captain may own the vessel.

In 1969 processing companies owned 13.2% of all salmon vessels. Three-quarters of the combined companies' fleets were gillnet vessels, with most of the remainder being seine vessels.

In the early 1980s processors sold their gillnet fleets. In 1985 processors owned outright approximately 150 seine vessels, but very few gillnet or troll vessels. Processors also have partial equity or other financial arrangements in many more seine vessels.

CAPITAL INVESTMENT

Capital investment in the fleet has increased dramatically since 1969. This investment has flowed from the increased earnings of the fleet in the 1970s. Owners strove to acquire bigger, more powerful and mobile boats to increase their catch of the available harvest. Replacement vessels entering the fishery were much more powerful than the vessels retiring. As well, many retrofits to the hull, motor, electronics and refrigeration equipment of existing vessels occurred. The majority of these capital expenditures were directed towards seine and freezer troll vessels. Several government incentives or subsidy programs encouraged these investments. While there has been little new construction of vessels over the last five years, there has been considerable conversion to freezer trollers and high speed bow-pickers (vessels with their drums located on the bow).

Limited entry licensing for salmon in 1969 was followed by further limited entry programs for other species in the 1970s. The increased earnings in the 1970s made a licence to fish salmon or herring a valuable privilege. Salmon and roe-herring licences acquired a capitalized value reflecting future earnings potential akin to a taxi licence, a big game outfitter's licence, a milk quota and other "rights of access" in limited supply. By the end of the 1979 fishing year, the value of a salmon seine licence had peaked at $7,000 a ton. In 1988, the long-term (99 year) lease value for a roe herring licence was approximately $750,000 for seine and $90,000 for gillnet. Licences for other limited-entry fisheries such as halibut have also acquired a value.

	Vessel Type				
	Seine	Gillnet	Gillnet-Troll	Troll	All
Number of Vessels	522	1701	899	1291	4413
Balance Sheet ($ millions)					
Fixed Assets:					
Original Cost of Licences	46	33	25	38	142
Original Cost of Vessel/Equipment/Residual	183	104	79	112	478
Less Accumulated Depreciation	85	34	30	43	192
Net Fixed Assets	144	103	74	107	428
Liabilities and Equity:					
Debt	27	22	18	25	92
Equity	117	81	56	82	336
Total Liabilities and Equity	144	103	74	107	428
Market Value ($ million)					
Salmon Licences	148	104	65	102	419
Other Licences	16	13	11	18	58
Herring Licences	114	7	14	10	145
Vessel/Equipment	257	93	64	111	525
Herring Punt	1	2	2	2	7
Total Market Value	536	219	156	241	1,152

TABLE 2 - SALMON FLEET CAPITAL INVESTMENT, 1988

In 1969 the estimated market value of the salmon fleet was $91 million (the licence had no value). In 1988 the estimated market value of the salmon fleet was $1.15 billion; $533 million in vessels and equipment, and $619 million in salmon, herring, and other fishing licences (based on vessel owners' estimates). Taking inflation into account, the capital value of the fleet had increased by a factor of 3.6.

For the purposes of calculating rate of return and other financial measures of the fleet's performance, the relevant measure of investment is net fixed assets or **book value**, defined as original purchase cost less accumulated depreciation.

In 1985 the constant dollar value of the total net fixed assets of the salmon fleet was $251 million. By 1988, this value had increased to $428 million - a 70 percent real increase in just three years (see Table 2). Demonstrating a high level of capital investment.

3. Analysis of Income Statements

This section analyzes revenues and expenses of the total salmon fleet and the four major fleet segments. Detailed income statements for the fleet are contained in Appendix B.

The starting point of the financial analysis is the Income Statement. The Income Statement provides a measure of net income to the fishing enterprise - gross income less operating expenses (including interest paid) and depreciation. The Income Statement together with the asset values and a measure of time commitment to fishing is used to analyze financial performance of the fleet in the next section. The 1985 and 1988 statements are based on data from the Pacific Costs and Earnings Surveys, while the intervening years are projections. These projections are from the Financial Impact Simulation Model (FISM) which draws upon catch data from sales slip information to determine income, and estimates fixed and variable costs based on the relationships established by the costs and earnings surveys.

Gross and Net Income

Figure 5 illustrates the changing levels of gross and net incomes for average vessels in the various fleet segments over the 1986 to 1990 period. The net income figures include both the return to the captain or operator plus the return on invested capital to the owner.

Income levels vary significantly among the five years. For each type of vessel, average net income was much greater in 1988 than in any other year. The varation in income is explained largely by variation in prices, which in 1988 were at a peak, coupled with strong returns of chinook, chum and pink salmon. The year of lowest net income was 1986 for seine and gillnet-troll vessels, while 1990 was the poorest for gillnet and 1989 was the worst for troll vessels. The low net income for seine and gillnet-troll can be explained by considering salmon prices and herring catch. Salmon landed prices were fairly low in 1986 relative to other years in the five year year period, and there was a poor return of sockeye and herring (largely affecting the seine fleet). The low for the gillnet fleet in 1990 resulted from the general decline in salmon prices, particularly the sockeye price. The troll fleet's low earnings were due to the large drop in the price of chinook in 1989 (which recovered slightly in 1990).

In 1986 the gillnet and gillnet-troll vessels all averaged from $13,000 to $20,000 net income, a vast improvement over their previous performance in the early 1980's with a low in 1983 of $3,000 net income. The change is even more dramatic for the troll vessels with a low in 1989 of $23,000 compared with a previous low in 1983 of $3,000.

It is noteworthy that an average vessel in each of the four fleet segments had positive net income in each of the years 1986 to 1990.

Generally, seine vessels earned the highest net income whereas gillnet vessels earned the lowest net income. This ranking is consistent with the levels of capital investment. Seine vessels had the highest level of capital investment, and gillnet vessels had the lowest.

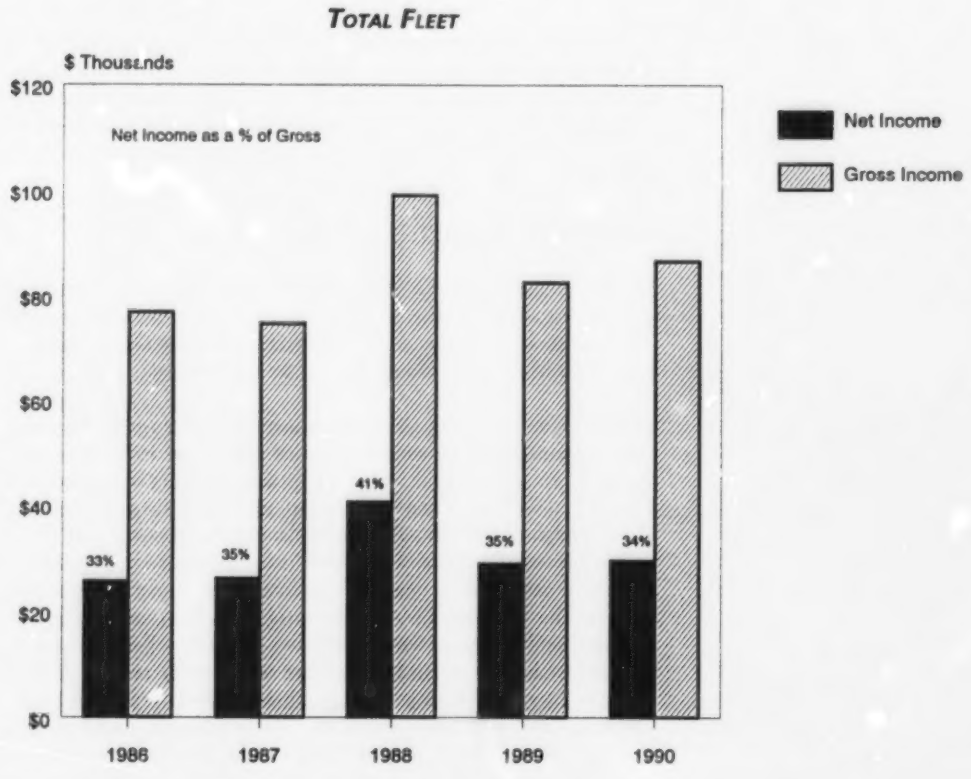
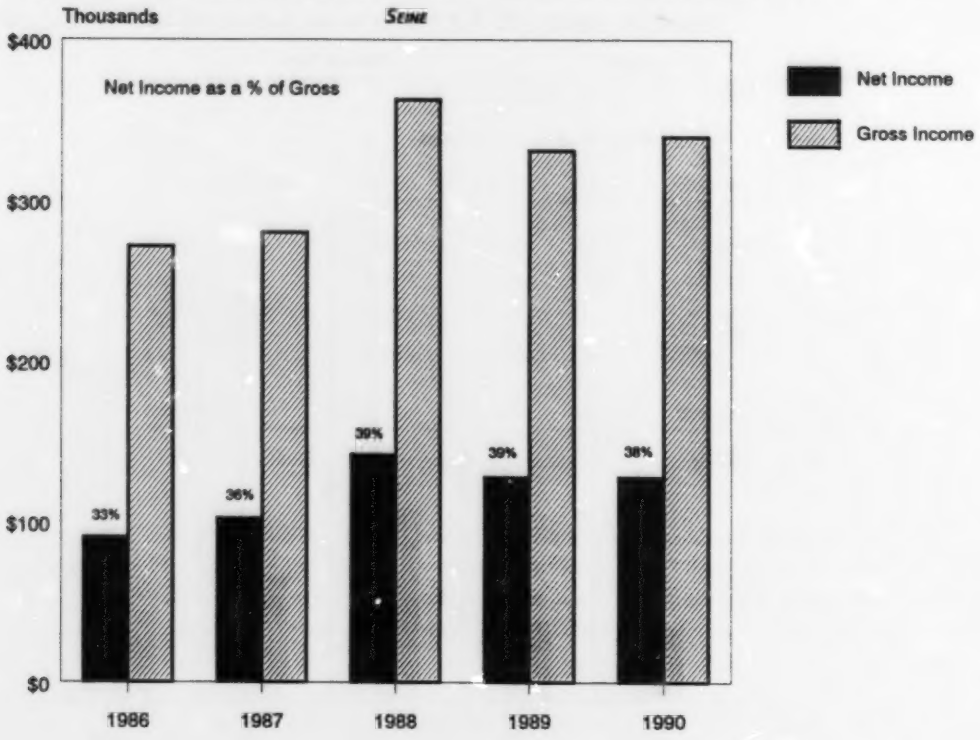


FIGURE 5 - GROSS AND NET INCOME OF AN AVERAGE SALMON VESSEL, 1986-1990

FIGURE 5A - GROSS AND NET INCOME OF AN AVERAGE SALMON VESSEL, CONTINUED



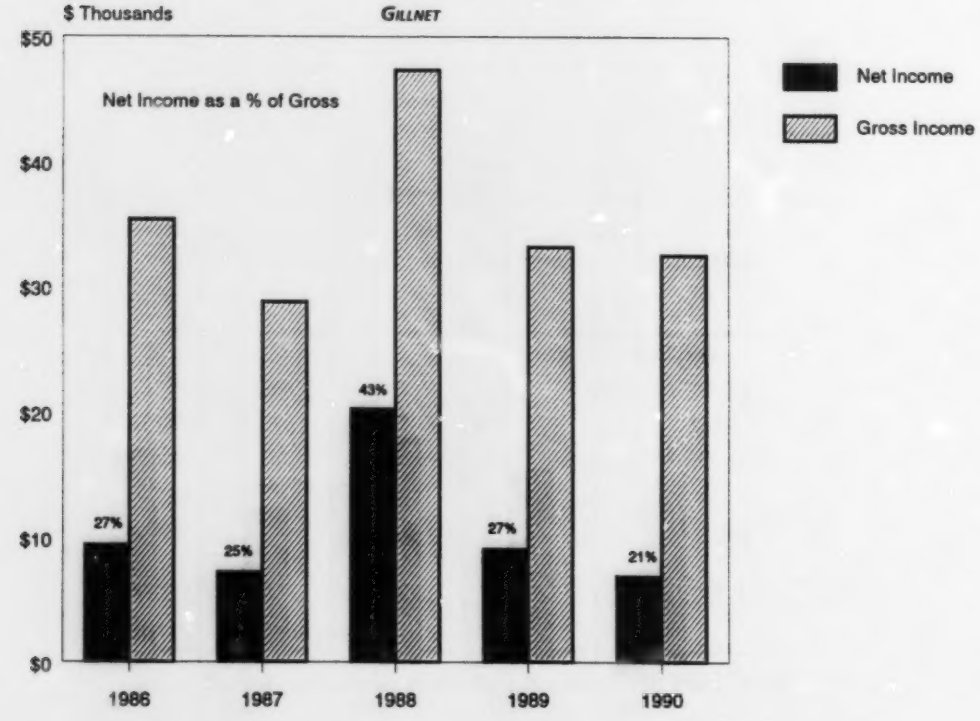
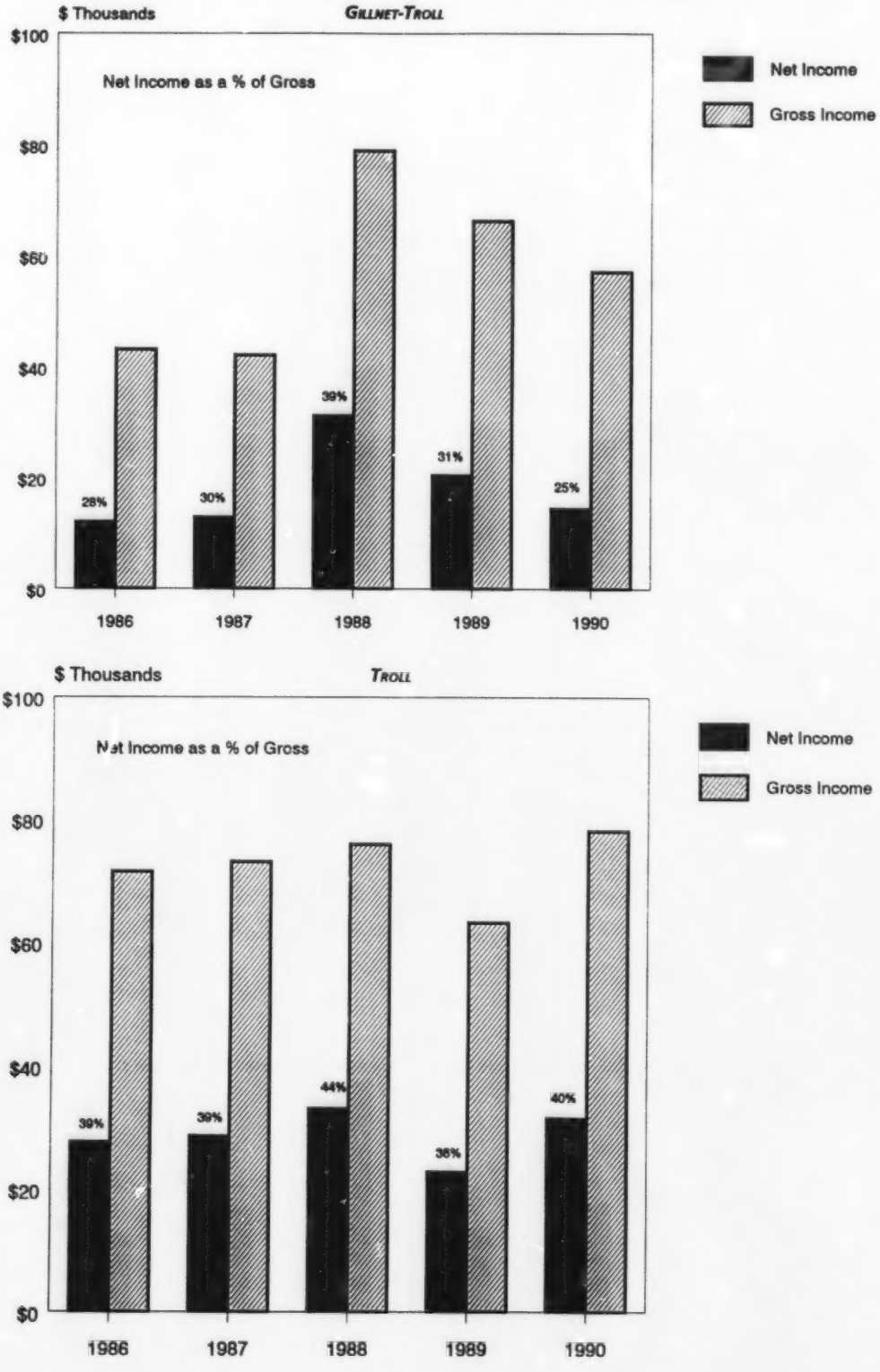


FIGURE 5B - GROSS AND NET INCOME OF AN AVERAGE SALMON VESSEL, CONTINUED



Vessel Type	Gross Income per Vessel				
	Salmon	Other Species	Other Income	**Total Gross Income**	Net Income
Seine	232,159	117,260	11,275	**360,694**	141,675
Gillnet	40,304	6,070	966	**47,340**	20,229
Gillnet-Troll	59,802	18,009	1,084	**78,895**	31,306
Troll	57,565	17,299	1,152	**76,016**	33,187
All Vessels	$72,020	$24,939	$2,264	**$99,223**	$40,642

TABLE 3 - AVERAGE GROSS AND NET INCOMES OF SALMON VESSELS, 1988

The year 1988 saw a substantial improvement in net income for the fleet. Net income per vessel increased to $40,600 or 41% of gross income (Table 3). However, in 1988 net income of the average seine vessel was more than four times greater than that of the average gillnet, gillnet-troll or troll vessel.

For the total fleet, net income ranged from a low of $113.6 million in 1986 to a high of $179.4 million in 1988 (Table 4). The seine fleet contributed 43% of total gross income and 41% of total net income over the combined five year period.

The above analysis relates to average vessels and the total fleet. As illustrated in Table 1, there was a wide distribution of gross income within the fleet as well as within each fleet segment. There would be as wide, if not wider, a distribution of net income. This is because interest payments on borrowed capital - a key expense item - vary within the fleet. Many vessels had little or no debt; other vessels incurred significant financing costs. Recent entrants typically have a much higher debt level over established vessels. They had a debt level six times the fleet average.

Vessel Type	Net Income * ($millions)				
	1986	1987	1988	1989	1990
Seine	$47.8	$52.5	$74.0	$68.6	$68.5
Gillnet	14.5	11.7	34.4	17.8	12.3
Gillnet-Troll	11.0	11.1	28.1	16.0	14.2
Troll	40.3	40.1	42.8	27.9	38.2
All Vessels	$113.6	$115.4	$179.4	$130.4	$133.1

* Captain's returns plus owner's returns.

TABLE 4 - NET INCOME OF THE TOTAL SALMON FLEET, 1986 - 1990

Major Expense Items

In 1988 the distribution of major expenses for the salmon fleet was:

	$ Millions	*% of Gross*
Total Gross Income	**437.9**	**100%**
Expenses		
Crew Wages (other than Captain)	104.1	23.8
Other operating (fuel, food, etc.)	34.3	7.8
Interest and Depreciation	42.3	9.7
Other Fixed Costs	77.9	17.8
Net Income	**179.3**	**40.9**

The largest expense item was crew wages which comprised 24% of gross income in 1988. Fixed costs of repair and maintenance, net and gear, insurance, etc. were the next largest component (18%).

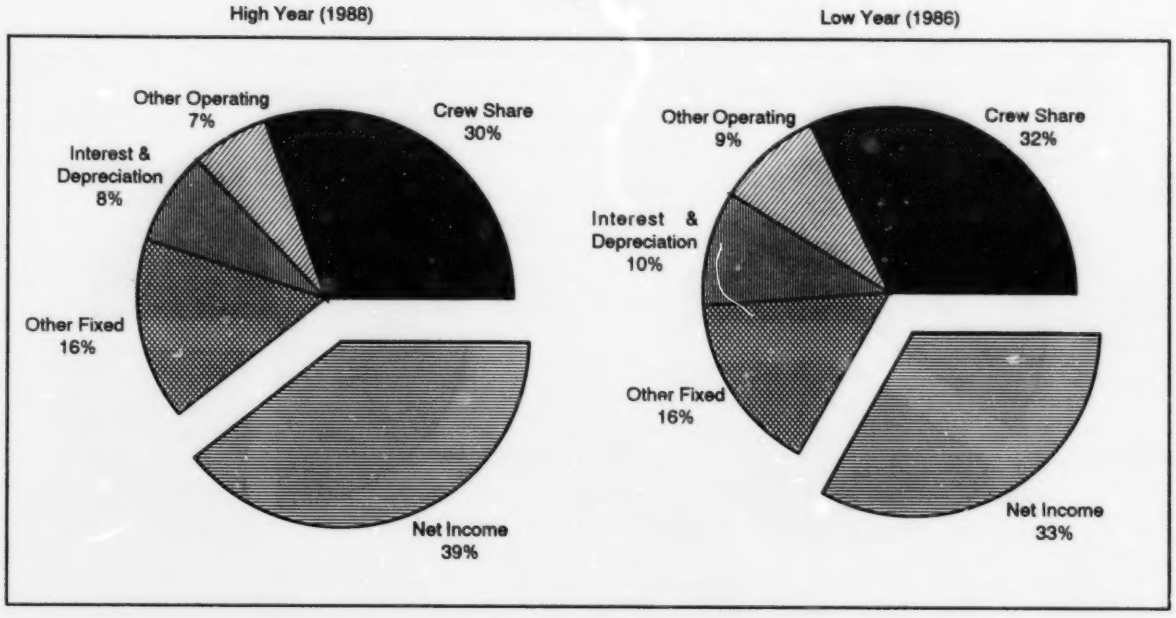
The pie charts (Figure 6) show the relative importance of major expense categories. For each fleet segment the distribution of expenses for a "high" year and a "low" year are shown. 1988 was used as a high year for all fleet segments. 1986 was used as a low year for seine, 1989 for troll, and 1990 for gillnet and gillnet-troll.

Wages to the crew excluding the captain for seine vessels were one third of gross income whereas crew wages for other salmon vessels were less than 23% of gross income. Crew payments usually are determined on the basis of a share system - each crew member gets a predetermined share of the landed value of the catch. The share system allows for a sharing of risk, returns and certain operating costs of the fishing enterprise. The crew share of gross income did not vary much between good and bad years for each fleet. Accordingly, seine vessels with their relatively large crew payments exhibited less variability in the ratio of net income to gross income across years than did other types of salmon vessels.

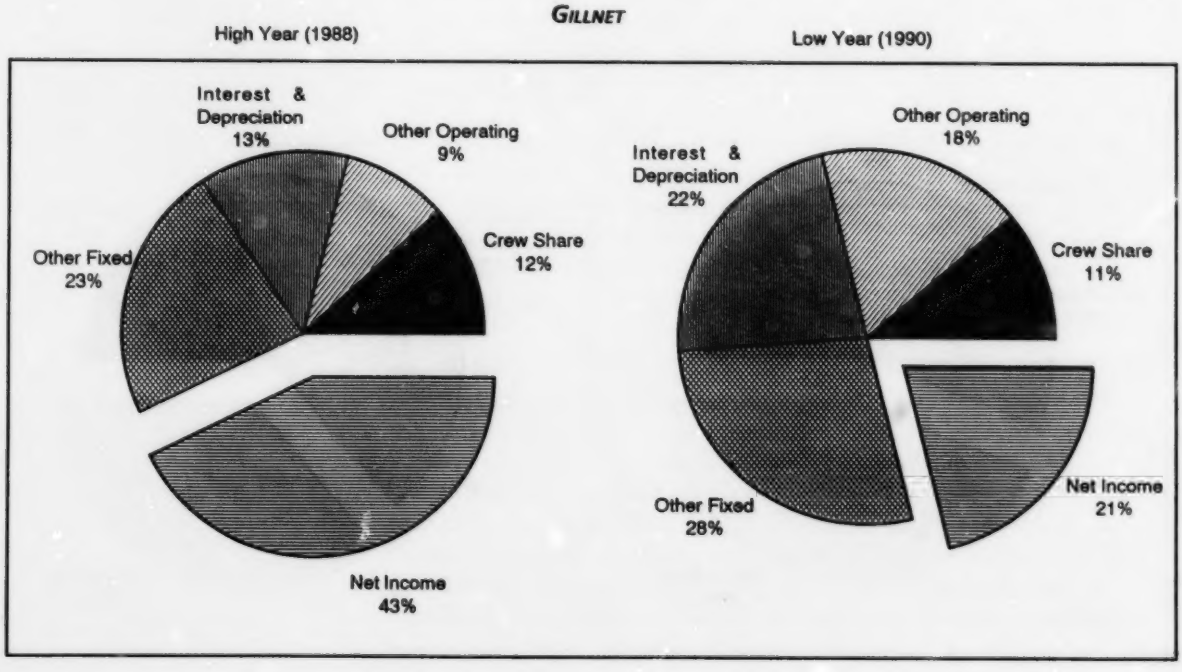
Interest and depreciation comprised a relatively small portion of gross income for the salmon fleet during the late 1980s compared with the early 1980s. However, recent entrants saw a greater proportion of their gross income going to cover interest expenses. "Fixed costs" were the most important expense category for gillnet, gillnet-troll, and troll vessels.

FIGURE 6 - PERCENTAGE DISTRIBUTION OF GROSS INCOME

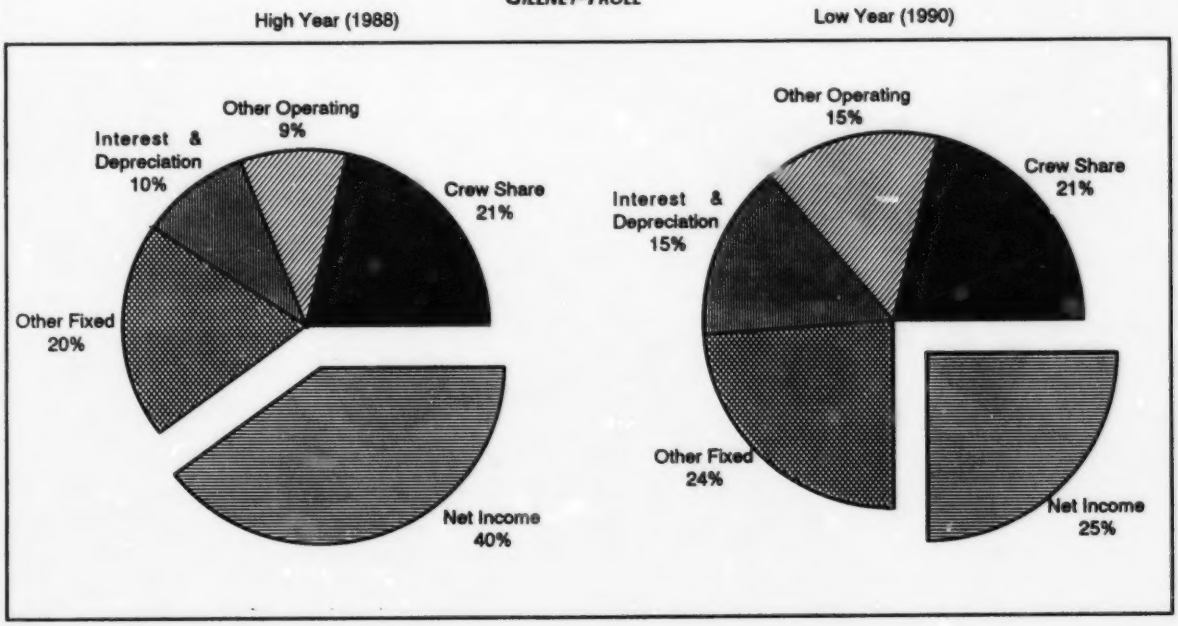
SEINE



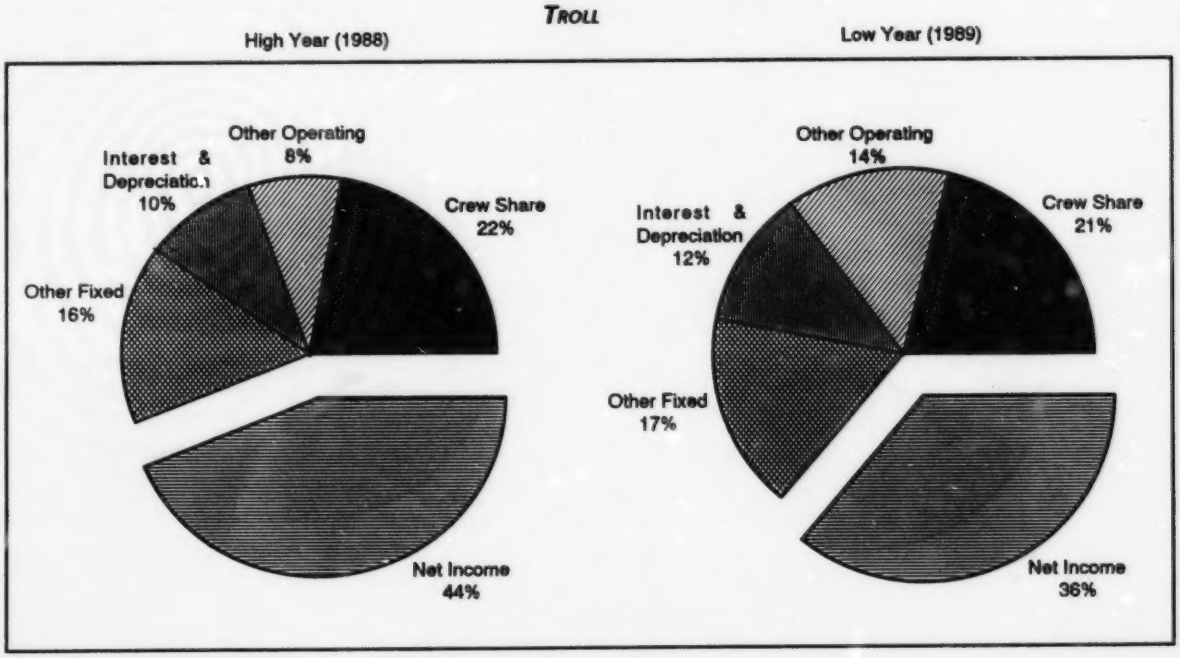
GILLNET



Gillnet-Troll



Troll



DETERMINANTS OF PROFITABILITY

Fleet profit levels reflect the difference between gross income and expenses - crew wages, other operating expenses, fixed costs (repairs and maintenance, nets and gear, etc.), depreciation, interest paid, and captain's remuneration. Of these factors, gross income is by far the most important.

As shown in Table 8 (page 23) there is a positive correlation between fleet profits and gross income over the 1984-1990 period. That is, the years of low gross income coincide with the years of low profits, and the years of high gross income coincide with the years of high profits.

"Crew wages" paid plus "captain's return" - the total payment to labour - represent the largest expense item at 38-42% of gross income (see Exhibits in Appendix B). For most fisheries, the crew and captain are compensated on a "share of catch" basis. Consequently, labour payments tend to vary directly with gross income.

Most of the other major expense items vary indirectly with gross income:

- Some components of "fixed costs", such as repairs, maintenance, and nets and gear, vary indirectly with gross income. This is because vessel owners have considerable flexibility with regard to these expenses - they can be accelerated in good years and curtailed in poor years.

- The categories "interest" and "depreciation" are partially affected by gross income. Fishermen tend to accelerate capital purchases (and thereby increase interest and depreciation charges) in good years and curtail capital purchases in poor years. More precisely, the level of capital purchases are a function of gross income in the current year and the several preceding years.

This evidence suggests strongly that fluctuations in gross income explain a much greater share of vagaries in fleet profit levels than do fluctuations in expense items. Over the five year period 1986 to 1990, fleet gross income varied by as much as $109 million and fleet profit varied by as much as $53 million. Interest paid, for example, is a small percentage of gross income and varied by only $3 million (Exhibit B.1, Appendix B). However, it is worth noting that while owners can reduce many expenses during a period of low gross income, interest paid will vary only with changes in debt levels and borrowing rates. Therefore, higher interest rates, during a period of low gross income, will have a greater impact on profit.

4. Financial Performance

A significant share of fishing enterprises are run on a family or owner-operated basis. That is, the owner-operator provides both the labour and capital to the business, and withdraws income from business cash flow. The investigation of financial performance of the salmon fleet - unlike most other industries - includes considerations of both owner's return on invested capital and captain's return on invested labour.

Returns to Captains and Owners

The net income analysis of Section 3 refers to the combined return to captain or operator's labour, capital invested and management or entrepreneurship. The assessment of financial performance of other industry sectors in Canada involves comparing the dollar return to capital to the level of capital invested to generate that return. Thus, in order to compare the financial performance of the salmon fleet to other industries, the aggregate return must be separated into a captain's return and an owners's return to capital - even though this is somewhat artificial since for the bulk of the fleet the captain and the owner are the same person.

- The "captain's return" for all operations is defined to be equal to the payment that a captain of a vessel owned by another party would receive (based on existing share arrangements for seine vessels and estimated as 25% of gross income for other vessels). Food costs are deducted.

- The "owners return" - also called pre-tax profit - is the earnings as a return on capital invested that the vessel owner receives. It is calculated as net income less captain's return. It represents the return to the owner of the vessel, gear and other equipment.

Table 5 reveals the returns to captains and owners of the total salmon fleet for the five year period (the sum of the two returns equals the net income of Table 4). Captains' return ranged from $64 million in 1987 to $80 million in 1988. The returns to owners - also called pre-tax profits - are much more volatile, and vary from a low of $46 million in 1986 to a high of $99 million in 1988.

Aggregate captains' return closely follow trends in landed value because of the share system for dividing catch value among captain, crew and owner. Owners' returns, being a residual after costs are subtracted, show wide variation. Total owners' returns over the 5 year 1986 -1990 period were positive. Captains' returns are more insulated from year to year variations than are owners' returns.

In interpreting the findings, we re-emphasize that most of the captains are also owners, and that owners' returns were generally high over the period.

Next, comparing profits by owners to the level of capital investment and comparing the captain's return to the time commitment to fishing will provide an assessment of the adequacy of the return to owners and captains.

Vessel Type	1986	1987	1988	1989	1990
	Captains' Returns ($ millions)				
Seine	18.5	18.6	20.8	20.6	20.2
Gillnet	13.5	11.8	19.4	15.7	11.4
Gillnet-Troll	10.0	8.5	17.0	12.4	13.4
Troll	25.4	25.2	22.9	18.1	22.0
All Vessels	$67.4	$64.1	$80.1	$66.8	$67.0
	Owners' Returns ($ millions)				
Seine	29.3	33.9	53.2	48.0	48.3
Gillnet	1.0	0.5	15.0	2.1	0.9
Gillnet-Troll	1.0	2.7	11.2	3.6	0.8
Troll	14.9	15.0	19.9	9.8	16.1
All Vessels	$46.2	$52.1	$99.3	$63.5	$66.1

TABLE 5 - SALMON FLEET CAPTAINS' AND OWNERS' RETURNS, 1986-1990

SALMON FLEET FINANCIAL PERFORMANCE, 1988

The 1988 DFO survey data allowed detailed analyses of performance for that year. Key Income Statement and Balance Sheet items for the fleet are summarized in Table 6.

The financial position of the fleet was very good in 1988. This superior performance reflects many aspects - the good fishing year in terms of record high landed value, the restructuring and decline of fleet debt in the early part of the decade, and lower interest rates. There follows an analysis of key financial ratios (detailed definitions of the ratios are provided in Appendix C).

Vessel Type	Seine	Gillnet	Gillnet-troll	Troll	All
Number of Vessels	522	1701	899	1291	4413
Fleet Values			*$ millions*		
Gross Income	188	81	71	98	438
Profit Before Tax	53	15	11	20	99
Net Fixed Assets	144	102	74	107	427
Debt	27	22	18	25	92
Equity	117	81	56	82	336
Financial Ratios					
Profit to Income	28%	19%	14%	20%	23%
Profit to Equity	45%	19%	19%	24%	29%
Interest Coverage	17.6	6.8	5.8	7	9.6
Interest to Income	2%	3%	3%	3%	3%
Profit to Assets	37%	15%	15%	19%	23%
Profit Before Int. to Assets	39%	17%	18%	22%	26%
Equity to Assets	81%	79%	76%	77%	78%

TABLE 6 - FINANCIAL RATIOS FOR THE SALMON FLEET, 1988

PROFIT BEFORE TAX AS A PERCENTAGE OF SALES

The ratio of profit to income is an all-inclusive measure of management effectiveness. For the B.C. fishing industry with its existing capital structure, its profit to sales should exceed 6%. In 1988 it was 23%.

PROFIT BEFORE TAX TO EQUITY

The ratio of before tax profit to equity measures the return to capital invested by shareholders/owners in a business. A 15% return rate is considered acceptable. The profit to equity ratio for the salmon fleet was substantially above this at 29% in 1988.

INTEREST COVERAGE RATIO

The interest coverage ratio is calculated as profit before tax and interest divided by annual interest expense. It measures a firm's ability to pay interest charges on debt. For industrial firms, current years interest should be covered by at least three times average annual earnings. The interest coverage for the fleet was 9.6 times in 1988.

INTEREST EXPENSES AS A PERCENTAGE OF SALES

The ratio of interest expenses to sales measures how much of selling price is used to pay interest charges. One would expect this ratio to be well under 10%. In 1988 the ratio for the total fleet was 3%.

Profit Before Tax to Total Assets

The ratio of profit before tax to total assets determines the return on assets employed in the business i.e., the productivity of the assets. For firms with a 50:50 equity-debt ratio the profit to assets ratio should be 7.5% to reap 15% return on equity. In 1988 the profit to assets ratio was 23%.

Profit Before Tax and Interest to Assets

This ratio measures the productivity of the assets without regard to how they were financed or how much interest must be paid to creditors. Generally this ratio should be above 15%. In 1988 it was 26%.

Equity to Assets

The ratio of equity to assets indicates the balance between assets held and the financing of these assets through equity. A higher ratio is considered favourable. Normally one would want this ratio to be at least 40%. In 1988 the equity to assets ratio for the fleet was 78%. However, including licences as part of assets and equity of the fleet makes this ratio appear more favourable since financial institutions will not lend against licences. When licences are excluded from the calculation the ratio was still a respectable 68%.

Table 6 also displays the above ratios for each fleet segment. The seine fleet performed very well in 1988; the profit-based ratios were well in excess of industry targets. The financial ratios for the troll fleet were stronger than those for the gillnet and gillnet-troll fleets, but were weaker than those for the seine fleet.

Financial Performance, 1986 - 1990

During the early 1980s fishing was generally poor and vessel owners curtailed expenditures to the extent possible. Very little new vessel

	Net Fixed Assets	Debt	Equity
End of Year		*... $ millions ...*	
1985	222	105	117
1986	291	113	178
1987	359	117	242
1988	428	92	336
1989	457	96	361
1990	488	107	381

Table 7 - Salmon Fleet Assets, Debt and Equity, 1986 - 1990

construction or refitting of existing vessels occurred. These factors resulted in a decline in the net fixed asset base of about 30% between 1981 and 1985. The restructuring of the financing of the fleet through bankruptcies, vessel seizures, forced sales, partial debt forgiveness and acquisition of seine vessels by processors resulted in an estimated decline of approximately fifty percent in fleet debt levels to $105 million in 1985. Equity, or net fixed assets less debt, is estimated to have held more or less constant at approximately $100 million during that period. Since then there has been a tremendous growth in net fixed assets and equity, although the rate of increase slowed dramatically by 1990. Net fixed assets increased at an average rate of 33% per year from 1985 to 1988, but slowed to an average of only 7% per year over 1988 to 1990.

Table 7 gives an approximate representation of assets, debt and equity levels for the salmon fleet over this period. Non survey year net fixed assets are forecasted by FISM which assumes that capital investment changes as total income changes.

	1984	1985	1986	1987	1988	1989	1990
No. Vessels	4252	4342	4435	4402	4413	4509	4508
Fleet Measures ($ Million)							
Gross Income	$211	$324	$341	$329	$438	$373	$391
Profit Before Tax	-3	42	46	52	99	64	66
Equity	100	117	178	242	336	361	381
Financial Ratios							
Profit to Income	-2%	13%	14%	16%	23%	17%	17%
Profit to Equity	-3%	36%	26%	21%	29%	18%	17%
Interest Coverage	0.8	3.8	4.4	4.7	9.6	6.4	6
Interest to Income	6%	5%	4%	4%	3%	3%	3%

TABLE 8 - SALMON FLEET FINANCIAL RATIOS, 1984 - 1990

Table 8 displays selected financial ratios for years 1984 through 1990. Through the years 1985 to 1990 the fleet exceeded general industry performance targets of: 6% profit to income, 15% profit to equity, an interest coverage ratio of 3 and 5% interest to income. However, they only just met the profit to equity targets of 15%, in 1989 and 1990.

The performance during the 1980s reflected the peaks and troughs in fleet income during that time. Salmon prices increased from 1985 levels and peaked in 1988, while catch levels varied, peaking in 1986 and again in 1990.

Salmon prices have declined from 1989 on, reflecting the appreciation of the Canadian dollar, the inventories held by processing companies and the increased world wide supply. 1990 prices are very nearly the same as they were in 1987. Thus, despite the high volume of salmon landed in 1990, the landed value was very nearly the lowest since 1985.

While herring catches during the late 1980s have been very high, prices in the last two years have followed the same trend as salmon.

Comparison with Other Industries

Many resource-based industries dependent on exports markets experienced severe downturns in profitability in the early 1980s. By 1985, though all had shown improvement in their financial performance.

In Table 9 the financial performance of the B.C. salmon fleet is compared with the performance of three other resource-based industries. As shown, neither the salmon fleet nor the other three industries dominated in terms of financial performance in any of the three measures provided. The B.C. salmon fleet has performed comparably with other industries. However, the financial ratios for all industries indicate a decline in 1990.

	1983	1984	1985	1986	1987	1988	1989	1990
	Percentage (%)							
Profit* to Total Income								
B.C. Salmon Fleet	-7%	-2%	13%	14%	16%	23%	17%	17%
Canada Fish Processing	-3	-1	0	4	4	3	3	2
Canada Metal Mining	-2	-3	-1	3	13	24	21	14
Canada Wood Industry	2	4	4	6	9	6	5	1
Profit* to Equity								
B.C. Salmon Fleet	-14%	-3%	36%	39%	21%	30%	18%	17%
Canada Fish Processing	-30	-10	1	26	26	25	24	22
Canada Metal Mining	-1	-3	-1	2	9	21	18	10
Canada Wood Industry	4	7	15	26	31	34	23	7
Interest Payments to Income								
B.C. Salmon Fleet	6%	6%	5%	4%	4%	3%	3%	3%
Canada Fish Processing	5	3	3	2	2	2	3	4
Canada Metal Mining	9	9	7	9	6	4	4	6
Canada Wood Industry	4	4	3	3	2	2	3	3

* Before tax and no recurring items.

Source: DFO Survey of Pacific Costs & Earnings (1985 & 1988)

Other Industries - Statistics Canada, Corporation Financial Statistics, Cat. No. 61-207,-006 Annual.

Table 9 - Financial Ratios For Selected Industries, 1979 - 1990

Adequacy of Captain's Returns

The adequacy of captain's returns is assessed comparing the dollar return per week committed, to weekly wages earned in the provincial economy. The time committed to fishing is a nebulous concept. Fishermen can spend considerable time before and after the season painting and repairing the vessel, repairing and cleaning nets and so on. Seine and gillnet fishermen may spend only one or two days per week actually fishing during the season, but the short fishing opening may entail working 18 hours or more per day. Time is also spent travelling to and from the fishing grounds.

	1986	1987	1988	1989	1990
Vessel Type	*$ Captain Return Per Week Worked*				
Seine	$1,635	$2,234	$1,748	$2,353	$1,913
Gillnet	435	431	570	412	297
Gillnet-Troll	463	503	848	738	573
Troll	930	1,157	1,014	924	964
All Vessels	743	886	896	839	708
	$ Crew Member Return per Week Worked				
Seine	$1,223	$1,563	$1,465	$1,677	$1,509
Gillnet	470	481	531	381	321
Gillnet-Troll	268	328	709	604	459
Troll	809	1,071	1,102	871	918
All Vessels	802	1,010	1,057	1,026	931
B.C. Weekly Industrial Wage	447	452	467	472	519

Table 10 - Captain and Crewmember Net Returns, 1986 - 1990

For the purposes of this analysis, weeks worked for a captain is taken to be the weeks actually fished plus six weeks pre- and post-season preparation time. The average salmon vessel captain or operator fishes approximately 13 weeks. Allowing another 6 week commitment to fishing in terms of pre- and post-season labour suggests that the captain of a salmon vessel devotes nearly 5 months, on average, to the industry each year.

From Table 5, we note that from 1986 to 1990, average captain's return (including income from non-salmon species) ranged from $14,000 to $18,000 per individual. Returns on a per week basis are shown in Table 10.

Average weekly returns of seine captains were substantially above those of the rest of the fleet. Weekly fishing earnings for the salmon fleet as a whole were much greater than the B.C. industrial average.

Based on the approach and assumptions used, captain's returns were adequate as compared to wages in the rest of the provincial economy. However, it should be again noted that the majority of salmon fleet captains are also vessel owners. For an owner-operator, the division of net returns between labour and capital is arbitrary. What is important is the total return in relation to the five months of work and the capital invested in the vessel, licence and equipment.

A Note on Crew Returns

Table 10 also displays average crew members' returns. For seine, gillnet-troll, and troll crews, the average weekly crew return from salmon, herring and other fisheries was 70-90% of the average captain's return in most years. For gillnet crews, the average crew return was above the average return of a gillnet captain except in 1988 and 1989 (this was influenced by the trend in number of gillnet vessels and estimated weeks fished). A much greater share of gillnet crew weeks occur in the lucrative roe herring fishery than for gillnet captains (many gillnet operators do not use any crew when fishing salmon). This results in a higher average return per week for gillnet crew members than for gillnet captains.

The average return of crew members over all vessels is substantially above the average wage in the province. However, the gillnet and gillnet-troll components are not above the average wage in the province for all years. The average crew member's return is much greater than the average captain's return because of the influence of seine crew on the average (a salmon seine vessel will have four crew, excluding the captain, whereas the non-seine fleet usually will have at most one crew member).

5. Factors Affecting Financial Performance

The assessment of financial performance of an industry sector involves comparing the profit level to the amount of capital invested. In this section we highlight the key aspects affecting the Income Statements and Balance Sheets of the B.C. salmon fleet since the late 1970s.

Factors Affecting Gross Income

In Section 3, gross income was identified as the major determinant of profitability. Gross income in turn is affected by four main factors: salmon catches (landings), salmon prices, salmon species mix and landed value from other species (which is also affected by landings and prices). Each of these is discussed in more detail below.

Salmon Catches (Landings). Figure 7 shows the total salmon landings for each gear type over the 1986 - 1990 period. Essentially all salmon landings by seiners represented landings on seine gear. All salmon landings by gillnetters and trollers represented landings on gillnet gear and troll gear respectively. Approximately two-thirds of salmon landings of the gillnet-troll fleet occurred on gillnet gear with the other third on troll gear.

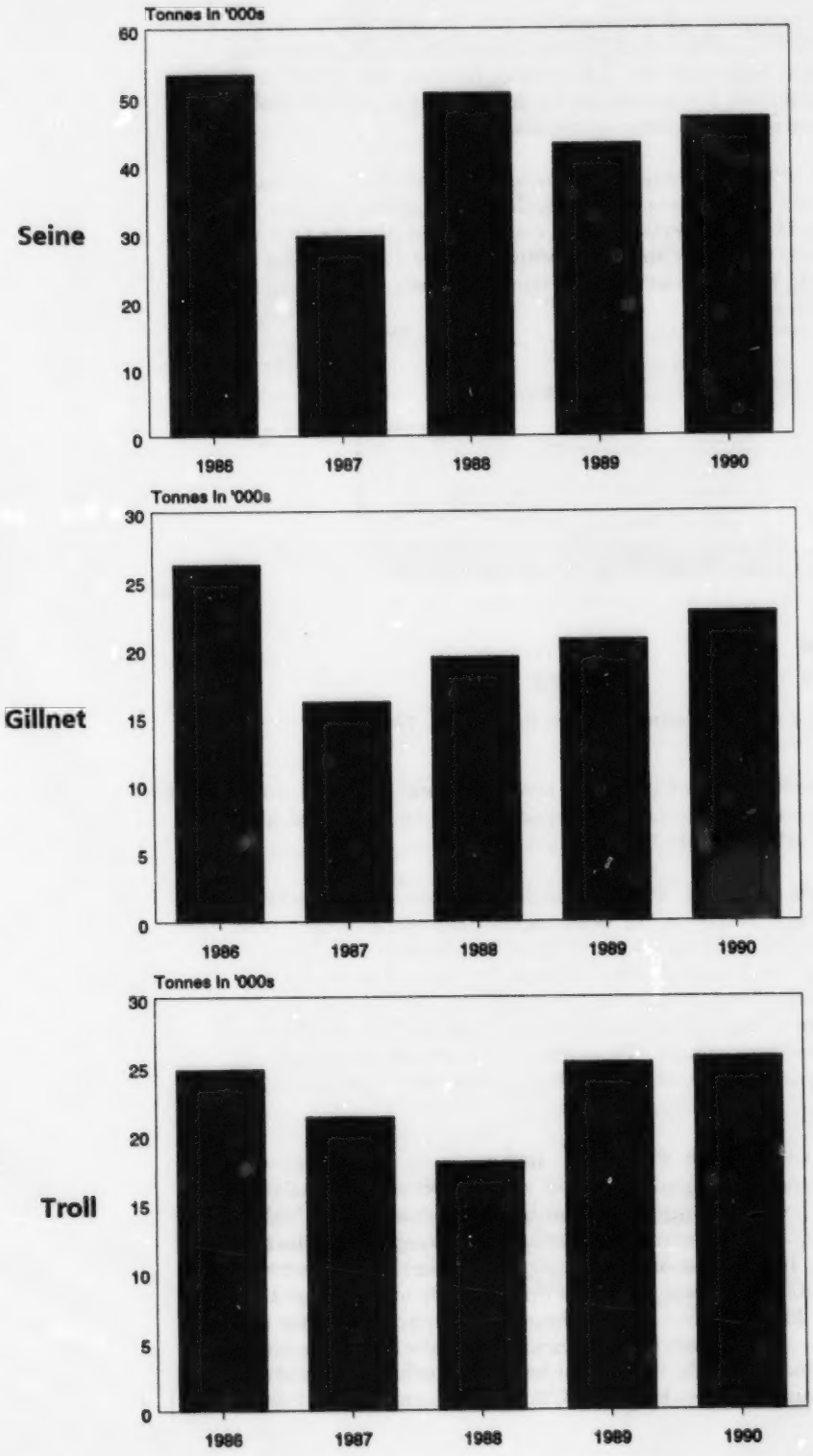
Over the study period there was much greater variability in seine, gillnet, and gillnet-troll landings than on troll landings. This reflects variability in landings of pink, sockeye, and chum - species primarily caught by seiners and gillnetters. Landings of chinook and coho species primarily caught by trollers were more stable.

Biological availability is the main factor which affects salmon landings. DFO regulations and management practices designed to conserve and enhance the salmon resource also have an effect.

Salmon Prices. A key factor underlying the lack of growth of income of the salmon fleet in the early 1980s was the lack of growth in salmon prices. However, during the latter half of the 1980s, the reverse has been true. There was significant growth in the price of all species, peaking in 1988. Since then, prices have declined to their 1986 levels. Figure 9 shows prices paid to fishermen including supplementary bonus payments.

The bulk of British Columbia salmon is exported and sold on world markets. As a result, world-wide supply and demand factors affect the price processors receive for their product. The prices paid to fishermen largely are dependent on the prices received by processors. Prices

FIGURE 7 - SALMON LANDINGS BY GEAR, 1986 - 1990



received by processors reflect several factors - landings for the current year (in British Columbia, Russia, Japan and especially Alaska), inventories, exchange rates (especially the U.K. pound, Japanese yen, and French franc), interest rates, farmed salmon production levels, product quality and the prices of other protein substitutes.

In 1989 and 1990 there were bumper harvests for both B.C. and Alaska, further contributing to inventories which began building up after the high prices paid in 1988. Prior to 1988, exchange rates with the U.S. and Japan generally favoured Canadian exports, but since then the dollar has strengthened. These two factors have reinforced each other during the decline in prices.

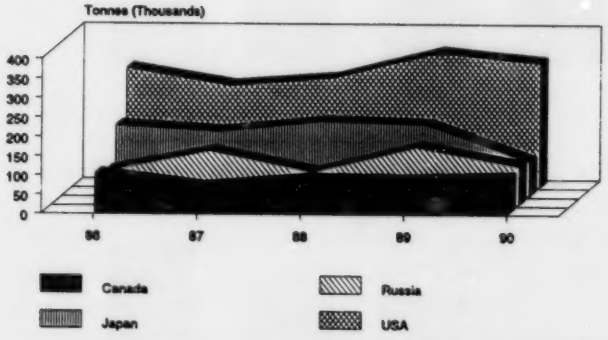


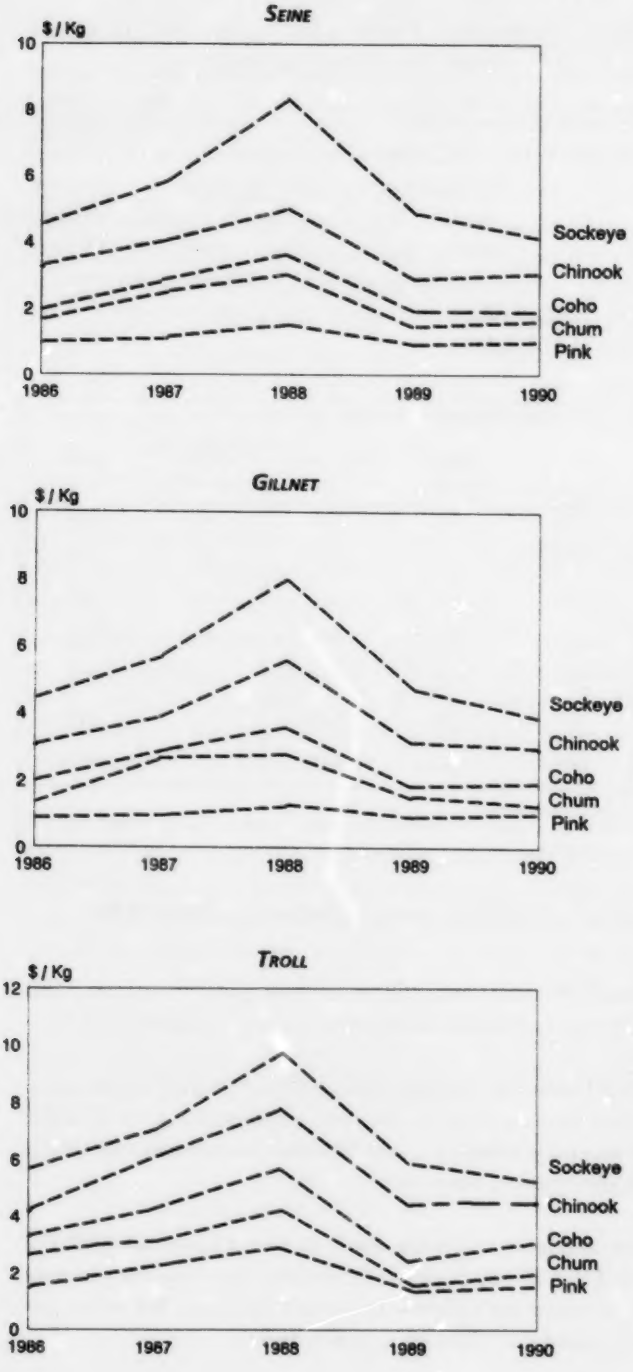
FIGURE 8 - PACIFIC SALMON LANDINGS BY COUNTRY, 1986 - 1990

The high interest rates of the early 1980s have not occurred since. Fortunately fishermen are not in the position of low prices and high interest rates as in the early 1980s.

SALMON SPECIES MIX. Prices are highest for chinook and sockeye. Pinks fetch the lowest price. In 1988, higher value species were worth six times or more than pink salmon (Figure 9). Consequently, changes in species mix can greatly alter the value of the catch. For example, in 1989, troll salmon landed value was lower than the previous year despite a 41% increase in landings, because the majority of the 1989 troll harvest was low-valued pink salmon. Presently, trollers are catching relatively more sockeye and pink - traditional net-caught species - than they did in the 1970s.

INCOME FROM OTHER SPECIES. Income from fishing herring, halibut and other non-salmon species is very important to the salmon fleet. By and large, combination salmon-herring operations earn higher profits and reap a greater return on investment than do operators who fish salmon alone. In 1986 non-salmon fishing income for the total fleet was $55 million. Over the next four years this generally increased, and by 1990 totalled $119 million. The roe herring fishery accounted for the majority of the income from other species. In 1988 roe herring earnings were $75 million. Recently, though, roe herring prices have followed the trend in salmon prices, resulting in a 37% decline from 1988 to 1989.

FIGURE 9 - AVERAGE PRICES PAID TO FISHERMEN, 1986 - 1990



FACTORS AFFECTING CAPITAL INVESTMENT

Discussed below are the main factors affecting the level of capital investment in the B.C. salmon fleet during the late 1980s.

INCOME OF THE SALMON FLEET. Capital investment in the fleet has increased in the mid to late 1980s in response to greatly increased earnings levels. This investment represents replacement of vessels as well as the refurbishing of existing vessels. Improvements to vessels, especially seiners, were accelerated after the good salmon earnings of 1985. The net fixed assets of the seine fleet increased nearly $135,000 per vessel over the period 1985 to 1988, while combination vessels had the next greatest increase per vessel of $52,000.

	Fishing Income ($ millions)				
	Salmon	Other Species*	All Species Total	Other Income**	Total Income
1984	151	49	**200**	11	**211**
1985	243	70	**313**	11	**324**
1986	275	55	**330**	11	**341**
1987	218	101	**319**	10	**329**
1988	318	110	**428**	10	**438**
1989	257	106	**363**	10	**373**
1990	261	120	**381**	10	**391**

* Includes herring, groundfish, etc.
** Includes other fishing related activities such as packing/collecting, charters, rebates, lease/rentals

TABLE 11 - COMPOSITION OF SALMON FLEET INCOME, 1984 - 1990

GOVERNMENT PROGRAMS. There are two government programs that potentially conflict with conservation and management goals:

- a special Revenue Canada provision of "straight line" depreciation for newly constructed vessels at an accelerated rate of 33 1/3% is an incentive to high income fishermen to invest in new vessels to shelter income from tax;

- guaranteed loans under the *Small Businesses Loans Act* (1987) of up to $100,000 by banks to fishermen, replacing the program offered under the Fisheries Improvement Loans Act which has been phased out (through a sunset clause).

These programs tend to lower the purchase and financing costs of fishing vessels, or reduce the net income and/or tax payable position of the fishing enterprise. Investment in the fleet is likely to be higher than if the programs were not in place.

Fishermen are the only self-employed individuals covered under the unemployment insurance (UI) system. The scheme is a national one and reflects social policy. However, one repercussion of UI coverage of fishermen is that the program tends to increase the attractiveness of fishing as an occupation, since benefits paid to fishermen far exceed their contributions. This feature bids up the price fishermen are willing to pay for vessels, licences and equipment above levels that would be paid if fishermen were not covered. In this sense, UI coverage of fishermen tends to increase investment in the fleet.

LENDING POLICIES OF FINANCIAL INSTITUTIONS. During the late 1970s lax lending policies of banks and other financial institutions had the effect of making financing readily available. This had several negative effects. It increased the market price for vessels and licences, which left many fishermen in financially untenable positions as interest rates rose and landed prices fell in the early 1980s. This was further exacerbated by the overcapacity of the fleet. By the mid 1980s, banks had tightened their lending practices to fishing enterprises and began to emphasize the fishermen's skills in the assessment of enterprise viability.

INTEREST RATES. High interest rates in the early 1980s coupled with excessive debt loads carried by fishermen hampered their ability to repay and service their debt. However, interest rates have been relatively stable over the last half of the 1980s with a modest increase during late 1989 into 1990. Currently, interest rates are at the lowest level in over 15 years.

6. Conclusions

In this study the financial performance of the British Columbia salmon fleet was assessed with particular reference to the five year period of 1986 to 1990. This report is intended to provide a continuation of the analysis of the salmon fleet on a basis comparable to "British Columbia Salmon Fleet Financial Performance 1981-1985".

Past Performance

- Gross income of the fleet has been variable. Salmon landings varied by a factor of three during the early 1980s, but by a factor of less than two during the period under review.

- Fleet income over the period 1986 to 1990 has been well above the average of any previous five year consecutive period. The lowest fleet income level for the period (1987) of $329 million was still well over the levels recorded during 1981-1984 (approximately $200 million).

- The bulk of British Columbia salmon is exported. Consequently, world wide supply and demand factors critically affect the prices received by fish processors, and by implication the prices received by salmon fishermen. Key factors are world production levels (particularly Alaska), inventories, exchange rates, farmed salmon production levels, product quality and the price of substitutes.

- Lower fleet debt levels than in the previous five years helped to stabilize financial performance and reduce the financial risk associated with high interest rates.

- Fleet investment and capacity have increased markedly over the last five years, particularly 1985 to 1988. This is the result of high incomes in the mid to late 1980s and several government incentive or subsidy programs. Debt levels, however, have not increased as dramatically as during the late 1970s.

- 1988 recorded a peak value for all species landed by the salmon fleet of $428 million, the highest level in thirty years. The market for fishing vessels and licences was extremely active, and total value reached an estimated $1.15 billion (vessels, equipment and all licences held by the salmon fleet).

- Net fixed assets increased by nearly 100% over the period 1985 to 1988, with modest changes in debt levels, implying that fishermen were largely using their earnings to finance investments (figure 10). The fleet return on equity was 39% in 1986, but had fallen to only 17% by 1990.

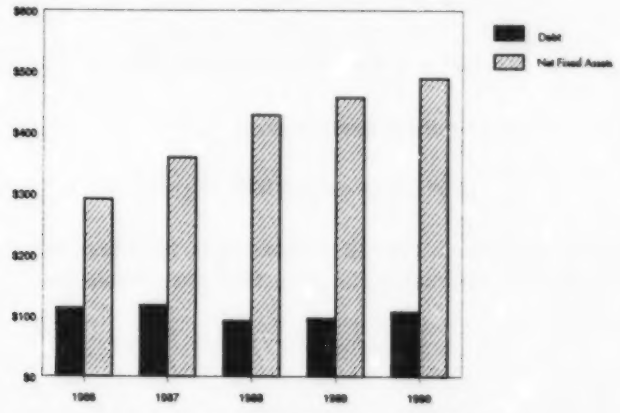


FIGURE 10 - SALMON FLEET NET FIXED ASSETS & DEBT, 1986 - 1990

- The $428 million in net fixed assets in 1988 was 70% of the $478 million original cost, and was only 37% of the $1.15 billion market value of assets.

- Government programs and policies have had an impact on performance of the salmon fleet primarily through allowing (and in fact encouraging) fleet investment to occur. Government policy therefore has tended to reinforce, rather than mitigate, the cyclical nature of industry financial returns.

- The fleet financial returns were very good, as were the returns for other resource based industries during this period. However, they continued to exhibit the cyclical nature observed over the early 1980s.

- On the basis of costs and earnings surveys in 1982, 1985 and 1988, it appears that the main factor underlying return variability among years are vagaries in the gross income as opposed to expense items. Crew wages and captain's remuneration form the largest single component of expenses and these vary with gross income due to the crew share system.

- The industry in the 1986 to 1990 period can be described as buoyant, prosperous and healthy, but increased capital investment now leaves the fleet more vulnerable to cyclical catch and declining prices. Vessel owners have invested heavily in their vessels and this leaves them little cushion for drops in gross income.

Future Prospects and Potential Performance

The analysis of past fleet performance suggests several target financial ratios for a healthy industry:

- before tax profit to gross income of 6%
- before tax profit to equity of 15%
- equity to assets to exceed 40%
- debt not to exceed 50% of gross income

From 1986 to 1990 all of these targets have been met or exceeded, but the trend in these ratios since 1988 is on the decline.

Appendix A

Methodology

METHODOLOGY

SURVEY FRAME

The target population for the survey is, except for processing companies, all the vessels licensed in 1988[3]. A file merging the 1988 Commercial Fishing Licence Database and the 1987 Landings file (Commercial Catch Database) provides for the survey frame.

STRATIFICATION

The population is stratified by 25 categories and by native/non-native categories, resulting in 50 strata. The 25 types are combination salmon seine, abalone, geoduck, roe herring seine, sablefish, groundfish trawl, single seine, salmon only gillnet, salmon + other species gillnet , salmon only ice troll, salmon + other species Troll, salmon only freezer troll, salmon + other species freezer troll, salmon only combination gillnet/troll, salmon + other species combination gillnet/troll, combination gillnet/troll-other I, combination gillnet/troll-other II, other troll (any troll not captured by the preceding stratum), halibut longline, groundfish troll, groundfish longline, crab trap, prawn trap, other shellfish, others/ unknown.

WEIGHTING FUNCTION

After the 1988 Landings file (Commercial Catch Database) became available, adjustments were made to those categories which switched stratum since 1987. To reflect the changes, the weighting function reads as follows:

original weight * population $_{1988}$ / estimated population $_{1988}$

where original weight $_{1987}$ = population $_{1987}$ / survey returns and the

estimated population $_{1988}$ = weighted population $_{1988}$ using the original weight.

SAMPLE SIZE AND SELECTION

Stratified Systematic Sampling is used: the entire population is stratified according to the above criteria before it is systematically sampled. In each stratum, the sampling process starts at a randomly selected number and continues at a pre-determined interval until the stratum has reached its sample size. The exceptions are the twelve strata for combination salmon seine, abalone, geoduck, roe herring seine, sablefish and groundfish trawl where a census is considered appropriate.

[3] Vessels having a only "P" licence were excluded.

The initial sample sizes were determined in the previous survey of 1985. With adjustment for rounding and small samples where one hundred percent sampling apply, the final sample size is 1,462 in total.

FIELD PROCEDURES AND RESPONSE RATES

Interviews were conducted in person by interviewers from Statistics Canada who act as agents for the Department of Fisheries and Oceans. Field work was carried out in April and May, 1989.

In terms of response, a total of 824 questionnaires (56 percent) have been fully completed for the purpose of analysis. There are a lot of reasons for "non-responses". For instance, 3% percent partial responses, 16% percent and 15% percent respectively unable to be contacted and traced as well as 10% percent each deceased and refusals.

RELIABILITY OF ESTIMATES

While it is not impossible to provide the co-efficient of variation (CV) for all estimates from the survey, this report only shows that of the main estimate, the gross fishing income of an average vessel owner who earned fishing income in 1988. Exact variance is not easy to be calculated for systematic sampling and an approximation produced by the simple random sampling is used instead. The CV's shown below can therefore serve as a guide only.

GEAR TYPE	CV (%)	GEAR TYPE	CV (%)
Salmon Seine	5.0%	Halibut Longline	6.6%
Salmon Gillnet only	5.1%	Sablefish Longline	5.2%
Salmon Troll only	4.7%	Sablefish Trap	8.1%
Salmon Gillnet/Troll	5.6%	Groundfish Trawl	9.4%
Herring Seine	4.6%	Groundfish Longline	14.3%
Herring Gillnet	7.3%	Groundfish Troll	16.4%

With the exception of Groundfish Longline and Troll, all CV's are under 10 percent. Most estimates are considered reasonably reliable.

Appendix B

Salmon Fleet Profiles
1981-90

EXHIBIT B.1: PROFILE OF TOTAL SALMON FLEET, 1981 – 1985

	1981	1982	1983	1984	1985
NO. VESSELS IN FLEET	**4,563**	**4,528**	**4,458**	**4,252**	**4,342**
NET INCOME ($ million)					
Gross Income	$224.6	$232.3	$186.2	$210.5	$324.4
Fishing	216.0	222.9	176.2	200.0	313.6
Salmon	178.3	186.0	124.6	150.8	242.8
Herring	25.0	23.0	36.4	30.9	44.5
Other	12.7	13.9	15.2	18.3	26.3
Packing & other	8.6	9.4	10.0	10.5	10.8
Operating Expenses	$79.8	$80.9	$80.4	$81.0	$113.5
Fuel, Oil, Grease, & Food	23.8	26.1	29.4	30.9	34.5
Other Operating Exp	0.7	1.0	1.2	1.3	1.5
Wages (Excl. Captain)	55.3	53.8	49.8	48.8	77.5
Fixed Costs	$48.4	$52.0	$48.8	$52.5	$64.6
Repairs/Maintenance	18.0	18.9	16.8	18.6	25.5
Nets & Gear	12.1	12.9	10.9	12.6	16.7
Other Fixed Costs	18.3	20.2	21.1	21.3	22.4
Capital Charges	$50.0	$46.3	$34.5	$35.5	$41.8
Interest Paid	21.3	17.6	11.1	12.5	14.6
Depreciation	28.7	28.7	23.4	23.0	27.2
Net Income(a)	$46.4	$53.1	$22.5	$41.5	$104.5
Captain Returns	44.9	48.6	36.3	44.6	62.9
Owner Returns	1.5	4.5	(13.8)	(3.1)	41.6
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	2.17	2.16	2.21	2.24	2.22
Weeks Fished	13.8	14.3	14.6	15.1	15.9

(a) Net return to capital invested and captain labour

Source: The DPA Group Inc. Financial Performance of the B.C. Salmon Fleet

EXHIBIT B.2: PROFILE OF TOTAL SALMON FLEET, 1986 – 1990

	1986	1987	1988	1989	1990
NO. VESSELS IN FLEET	4,435	4,402	4,413	4,509	4,508
NET INCOME ($ million)					
Gross Income	$341.4	$329.4	$437.9	$372.5	$390.7
Fishing	330.0	319.1	427.9	363.1	380.7
Salmon	275.3	217.7	317.8	256.7	261.2
Herring	29.3	75.2	61.5	47.7	56.9
Other	25.4	26.1	48.6	58.6	62.6
Packing & other	11.5	10.4	10.0	9.5	10.1
Operating Expenses	$119.5	$105.4	$138.3	$126.7	$134.7
Fuel, Oil, Grease, & Food	29.1	23.5	29.4	36.0	40.9
Other Operating Exp	10.9	4.8	4.9	5.8	6.6
Wages (Excl. Captain)	79.5	77.1	104.1	84.9	87.3
Fixed Costs	$66.4	$66.1	$77.9	$71.4	$75.1
Repairs/ Maintenance	27.1	26.2	26.9	23.6	24.4
Net & Gear	17.4	16.5	19.9	17.1	17.8
Other Fixed Costs	21.8	23.4	31.1	30.7	32.9
Capital Charges	$42.0	$42.5	$42.3	$44.0	$47.8
Interest	13.7	13.9	11.5	11.6	13.2
Depreciation	28.2	28.6	30.9	32.4	34.6
Net Income (a)	$113.6	$115.4	$179.4	$130.4	$133.1
Captain Returns (b)	67.5	63.9	80.1	66.8	67.0
Owner Returns	46.1	51.5	99.2	63.5	66.1
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	2.33	2.33	2.33	2.33	2.33
Weeks Fished	14.7	11.1	14.1	13.0	15.0

EXHIBIT B.3: PROFILE OF SALMON SEINE FLEET, 1981 – 1985

	1981	1982	1983	1984	1985
NO. VESSELS IN FLEET	538	539	527	517	536
NET INCOME ($ million)					
Gross Income	$94.8	$79.2	$87.7	$68.9	$140.5
Fishing	90.4	74.3	82.5	63.4	134.6
Salmon	72.1	58.5	54.2	38.0	97.2
Herring	15.8	12.9	25.2	21.6	31.6
Other	2.5	2.9	3.1	3.8	5.8
Packing & other	4.4	4.9	5.2	5.5	5.9
Operating Expenses	$40.1	$34.6	$39.6	$34.8	$59.3
Fuel, Oil, Grease, & Food	6.4	6.4	8.5	10.3	11.9
Other Operating Exp	0.1	0.1	0.2	0.2	0.3
Wages (Excl. Captain)	33.6	28.1	30.9	24.3	47.1
Fixed Costs	$17.5	$18.3	$19.5	$17.4	$23.8
Repairs/Maintenance	7.2	7.2	7.7	6.2	10.6
Nets & Gear	3.6	3.7	4.0	3.2	4.6
Other Fixed Costs	6.7	7.4	7.8	8	8.6
Capital Charges	$13.9	$13.1	$11.8	$8.8	$12.6
Interest Paid	5.5	4.7	3.5	2.7	4.2
Depreciation	8.4	8.4	8.3	6.1	8.4
Net Income(a)	$23.3	$13.2	$16.8	$7.9	$44.8
Captain Returns(b)	12.8	10.9	12.2	9.7	18.2
Owner Returns	10.5	2.3	4.6	(1.8)	26.6
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	5.11	5.03	4.97	4.96	5.03
Weeks Fished	12.1	11.1	13.0	14.8	16.7

(a) Net return to capital invested and captain labour.

(b) Based on share arrangements.

Source: The DPA Group Inc. Financial Performance of the B.C. Salmon Fleet

EXHIBIT B.4: PROFILE OF SALMON SEINE FLEET, 1986 – 1990

	1986	1987	1988	1989	1990
NO. VESSELS IN FLEET	528	514	522	537	536
NET INCOME ($ million)					
Gross Income	$143.4	$143.9	$188.3	$178.1	$182.3
Fishing	137.3	137.8	182.4	171.7	175.6
Salmon	110.5	73.1	121.2	113.3	104.4
Herring	21.7	59.4	42.1	32.8	43.9
Other	5.1	5.3	19.1	25.6	27.3
Packing & other	6.1	6.1	5.9	6.4	6.7
Operating Expenses	$58.6	$54.2	$69.4	$64.7	$66.2
Fuel, Oil, Grease & Food	10.8	9.0	10.1	11.8	13.4
Other Operating Exp	2.4	0.3	2.1	2.2	2.6
Wages (Excl. Captain)	45.4	44.9	57.2	50.7	50.2
Fixed Costs	$23.3	$23.7	$29.8	$28.9	$30.0
Repairs/ Maintenance	10.8	10.9	11.4	10.9	11.1
Net & Gear	4.7	4.7	5.6	5.3	5.4
Other Fixed Costs	7.8	8.1	12.9	12.7	13.5
Capital Charges	$13.7	$13.6	$15.1	$16.0	$17.6
Interest	4.5	4.3	3.2	3.8	4.6
Depreciation	9.2	9.3	11.9	12.2	13.0
Net Income (a)	$47.8	$52.5	$74.0	$68.6	$68.5
Captain Returns (b)	18.5	18.6	20.8	20.6	20.2
Owner Returns	29.3	33.9	53.2	48.0	48.3
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	5.11	5.11	5.11	5.11	5.11
Weeks Fished	15.7	12.2	16.8	12.3	13.7

EXHIBIT B.5: PROFILE OF SALMON GILLNET FLEET, 1981 – 1985

	1981	1982	1983	1984	1985
NO. VESSELS IN FLEET	1,247	1,331	1,239	1,151	1,501
NET INCOME ($ million)					
Gross Income	$30.1	$35.1	$20.3	$26.6	$57.4
Fishing	29.5	34.4	19.5	25.8	56.3
Salmon	25.4	29.7	14.5	20.9	48.5
Herring	2.4	2.7	3.0	2.5	3.4
Other	1.7	2.0	2.0	2.4	4.4
Packing & other	0.6	0.7	0.8	0.8	1.1
Operating Expenses	$7.8	$9.1	$7.8	$8.6	$15.0
Fuel, Oil, Grease, & Food	3.6	4.2	4.1	4.4	7.5
Other Operating Exp	0.1	0.2	0.1	0.2	0.3
Wages (Excl. Captain)	4.1	4.7	3.6	4.0	7.2
Fixed Costs	$7.8	$9.2	$7.2	$8.8	$14.0
Repairs/Maintenance	2.2	2.6	1.7	2.5	4.3
Nets & Gear	2.6	3.0	2.0	2.8	5.1
Other Fixed Costs	3.0	3.6	3.5	3.5	4.6
Capital Charges	$7.3	$7.2	$4.8	$5.2	$7.6
Interest Paid	2.8	2.4	1.3	1.6	2.4
Depreciation	4.5	4.8	3.5	3.6	5.2
Net Income(a)	$7.2	$9.6	$0.5	$4.0	$20.8
Captain Returns(b)	7.5	8.7	5.0	6.6	14.2
Owner Returns	(0.3)	0.9	(4.5)	(2.6)	6.6
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	1.54	1.57	1.56	1.57	1.53
Weeks Fished	10.7	11.1	11.1	12.6	15.7

(a) Net return to capital invested plus captain labour.

(b) 25% of gross fishing plus packing income.

Source: The DPA Group Inc. Financial Performance of the B.C. Salmon Fleet

EXHIBIT B.6: PROFILE OF SALMON GILLNET FLEET, 1986 – 1990

	1986	1987	1988	1989	1990
NO. VESSELS IN FLEET	1,538	1,625	1,701	1,966	1,787
NET INCOME ($ million)					
Gross Income	$54.4	$46.8	$80.5	$65.2	$58.2
Fishing	53.6	46.1	78.9	63.9	57.1
Salmon	47.5	37.9	68.6	53.7	46.8
Herring	1.9	3.9	4.2	3.2	2.8
Other	4.2	4.3	6.1	7.0	7.5
Packing & other	0.8	0.7	1.6	1.3	1.1
Operating Expenses	$17.7	$12.5	$17.0	$16.5	$16.7
Fuel, Oil, Grease & Food	6.2	4.2	7.0	8.4	9.4
Other Operating Exp	3.8	1.8	0.6	0.7	0.8
Wages (Excl. Captain)	7.6	6.5	9.4	7.4	6.5
Fixed Costs	$13.7	$13.2	$18.4	$18.0	$16.7
Repairs/ Maintenance	4.3	3.7	5.9	5.1	4.6
Net & Gear	4.8	4.2	5.8	5.0	4.5
Other Fixed Costs	4.6	5.3	6.6	7.9	7.6
Capital Charges	$8.6	$9.4	$10.8	$12.8	$12.5
Interest	2.5	2.8	2.6	2.9	2.9
Depreciation	6.1	6.6	8.2	9.9	9.6
Net Income (a)	$14.5	$11.7	$34.4	$17.8	$12.3
Captain Returns (b)	13.5	11.7	19.4	15.7	11.4
Owner Returns	1.0	0.0	15.0	2.1	0.9
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	1.63	1.63	1.63	1.63	1.63
Weeks Fished	14.2	10.7	14.0	13.4	15.5

EXHIBIT B.7: PROFILE OF SALMON GILLNET-TROLL FLEET, 1981 – 1985

	1981	1982	1983	1984	1985
NO. VESSELS IN FLEET	1,237	1,020	990	1,113	749
NET INCOME ($ million)					
Gross Income	$38.6	$37.5	$23.3	$38.2	$37.6
Fishing	36.8	35.9	21.7	36.2	36.2
Salmon	32.2	31.3	16.6	30.8	29.8
Herring	2.6	2.7	3.0	2.5	3.5
Other	2.0	1.9	2.1	2.9	2.9
Packing & other	1.8	1.6	1.6	2.0	1.4
Operating Expenses	$11.1	$10.8	$9.5	$12.2	$10.8
Fuel, Oil, Grease, & Food	5.1	4.9	5.1	6.0	4.7
Other Operating Exp	0.2	0.2	0.3	0.3	0.2
Wages (Excl. Captain)	5.8	5.7	4.1	5.9	5.9
Fixed Costs	$9.5	$8.7	$7.4	$10.3	$8.7
Repairs/Maintenance	3.2	2.9	2.1	3.5	3.2
Nets & Gear	2.4	2.2	1.6	2.6	2.4
Other Fixed Costs	3.9	3.6	3.7	4.2	3.1
Capital Charges	$10.8	$8.4	$5.4	$7.2	$5.9
Interest Paid	5.6	4.0	2.3	3.3	2.6
Depreciation	5.2	4.4	3.1	3.9	3.3
Net Income(a)	$7.2	$9.6	$1.0	$8.5	$12.2
Captain Returns(b)	9.6	9.3	5.8	9.5	8.7
Owner Returns	(2.4)	0.3	(4.8)	(1.0)	3.5
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	1.76	1.77	1.79	1.81	1.79
Weeks Fished	17.5	18.3	18.1	17.7	19.7

(a) Net return to capital invested plus captain labour.

(b) 25% of gross fishing plus packing income.

Source: The DPA Group Inc. Financial Performance of the B.C. Salmon Fleet

EXHIBIT B.8: PROFILE OF SALMON GILLNET-TROLL FLEET, 1986 – 1990

	1986	1987	1988	1989	1990
NO. VESSELS IN FLEET	916	867	899	782	978
NET INCOME ($ million)					
Gross Income	$39.6	$36.6	$71.0	$51.8	$55.9
Fishing	38.2	35.4	70.0	51.1	55.2
Salmon	33.1	27.8	53.8	35.5	39.7
Herring	2.3	4.7	7.9	6.1	5.3
Other	2.8	2.9	8.3	9.5	10.2
Packing & other	1.4	1.2	1.0	0.7	0.7
Operating Expenses	$12.1	$9.4	$21.9	$18.3	$20.3
Fuel, Oil, Grease & Food	3.9	2.8	5.6	6.3	7.3
Other Operating Exp	2.0	0.8	1.1	1.2	1.3
Wages (Excl. Captain)	6.3	5.8	15.2	10.8	11.7
Fixed Costs	$9.7	$9.3	$14.1	$11.2	$13.2
Repairs/ Maintenance	3.4	3.1	5.0	3.8	4.1
Net & Gear	2.5	2.3	4.1	3.1	3.4
Other Fixed Costs	3.8	3.9	5.1	4.3	5.7
Capital Charges	$6.8	$6.7	$6.8	$6.1	$8.2
Interest	2.3	2.4	2.3	2.1	2.8
Depreciation	4.5	4.3	4.5	4.0	5.4
Net Income (a)	$11.0	$11.1	$28.1	$16.0	$14.2
Captain Returns (b)	10.0	8.5	17.0	12.4	13.4
Owner Returns	1.0	2.6	11.2	3.6	0.8
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	2.23	2.23	2.23	2.23	2.23
Weeks Fished	17.8	13.5	16.3	15.5	17.9

EXHIBIT B.9: PROFILE OF SALMON TROLL FLEET, 1981 – 1985

	1981	1982	1983	1984	1985
NO. VESSELS IN FLEET	1,541	1,638	1,702	1,471	1,556
NET INCOME ($ million)					
Gross Income	$61.1	$80.5	$54.9	$76.8	$88.9
Fishing	59.3	78.3	52.5	74.6	86.5
Salmon	48.6	66.5	39.3	61.1	67.3
Herring	4.3	4.7	5.2	4.3	6.0
Other	6.4	7.1	8.0	9.2	13.2
Packing & other	1.8	2.2	2.4	2.2	2.4
Operating Expenses	$20.8	$26.4	$23.5	$25.4	$28.4
Fuel, Oil, Grease, & Food	8.7	10.6	11.7	10.2	10.4
Other Operating Exp	0.3	0.5	0.6	0.6	0.7
Wages (Excl. Captain)	11.8	15.3	11.2	14.6	17.3
Fixed Costs	$13.6	$15.8	$14.7	$16.0	$18.1
Repairs/Maintenance	5.4	6.2	5.3	6.4	7.4
Nets & Gear	3.5	4.0	3.3	4.0	4.6
Other Fixed Costs	4.7	5.6	6.1	5.6	6.1
Capital Charges	$18.0	$17.6	$12.5	$14.3	$15.7
Interest Paid	7.4	6.5	4.0	4.9	5.4
Depreciation	10.6	11.1	8.5	9.4	10.3
Net Income(a)	$8.7	$20.7	$4.2	$21.1	$26.7
Captain Returns(b)	15.0	19.7	13.3	18.8	21.8
Owner Returns	(6.3)	1.0	(9.1)	2.3	4.9
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	2.13	2.11	2.11	2.13	2.11
Weeks Fished	14.0	15.5	15.6	15.1	14.1

(a) Net return to capital invested plus captain labour.

(b) 25% of gross fishing plus packing income.

Source: The DPA Group Inc. Financial Performance of the B.C. Salmon Fleet

EXHIBIT B.10: PROFILE OF SALMON TROLL FLEET, 1986 – 1990

	1986	1987	1988	1989	1990
NO. VESSELS IN FLEET	1,453	1,396	1,291	1,224	1,207
NET INCOME ($ million)					
Gross Income	$104.0	$102.2	$98.1	$77.4	$94.4
Fishing	100.9	99.8	96.6	76.3	92.9
Salmon	84.2	79.0	74.3	54.2	70.4
Herring	3.4	7.1	7.3	5.6	4.9
Other	13.3	13.7	15.0	16.5	17.6
Packing & other	3.1	2.4	1.5	1.1	1.5
Operating Expenses	$31.1	$29.3	$30.0	$27.2	$31.6
Fuel, Oil, Grease & Food	8.2	7.5	6.7	9.5	10.8
Other Operating Exp	2.7	1.9	1.1	1.7	1.9
Wages (Excl. Captain)	20.2	19.9	22.2	16.0	18.9
Fixed Costs	$19.7	$19.9	$15.6	$13.3	$15.2
Repairs/ Maintenance	8.7	8.5	4.6	3.8	4.6
Net & Gear	5.4	5.3	4.4	3.7	4.5
Other Fixed Costs	5.6	6.1	6.6	5.8	6.1
Capital Charges	$12.9	$12.8	$9.6	$9.1	$9.5
Interest	4.4	4.4	3.3	2.8	2.9
Depreciation	8.5	8.4	6.3	6.3	6.6
Net Income (a)	$40.3	$40.1	$42.8	$27.9	$38.1
Captain Returns (b)	25.4	25.1	22.9	18.1	22.0
Owner Returns	14.9	15.0	19.9	9.8	16.1
LABOUR INPUT PER VESSEL					
Crew Size (Incl. Captain)	2.21	2.21	2.21	2.21	2.21
Weeks Fished	12.8	9.6	11.5	11.0	12.7

EXHIBIT B.11: PROFILE OF SALMON SEINE, GILLNET, WITH AND WITHOUT HERRING FISHING, 1988

	Seine *(Herring)*	Seine *(No Herring)*	Gillnet *(Herring)*	Gillnet *(No Herring)*
NO. OF VESSELS IN FLEET	146	376	83	1618
NET INCOME ($million)				
Gross Income	**89.10**	**99.21**	**8.94**	**71.56**
Fishing	86.98	95.42	8.86	70.04
Salmon	39.95	81.26	4.62	63.98
Herring	42.10	0	4.20	0
Other	4.93	14.17	0.04	6.06
Packing & Other	2.12	3.78	0.08	1.52
Operating Expenses	**28.74**	**40.68**	**2.50**	**14.50**
Fuel, Oil, Grease & Food	3.93	6.17	0.86	6.14
Other Operating Exp	0.53	1.59	0.09	0.51
Wages (Excl. Captain)	24.29	32.91	1.54	7.86
Fixed Costs	**14.16**	**15.75**	**1.84**	**16.47**
Repairs/Maintenance	5.40	6.00	0.59	5.31
Net & Gear	2.65	2.95	0.58	5.22
Other Fixed Costs	6.11	6.79	0.66	5.94
Capital Charges	**5.95**	**9.15**	**0.55**	**10.25**
Interest Paid	1.15	2.05	0.19	2.41
Depreciation	4.80	7.10	0.36	7.84
Net Income	**40.25**	**33.63**	**4.05**	**30.35**
Captain Returns	8.95	11.85	2.02	17.38
Owner Returns	31.30	21.78	2.03	12.97

EXHIBIT B.12: PROFILE OF GILLNET-TROLL, TROLL, WITH & WITHOUT HERRING FISHING, 1988

	Gillnet-Troll *(Herring)*	Gillnet-Troll *(No Herring)*	Troll *(Herring)*	Troll *(No Herring)*
NO. OF VESSELS IN FLEET	141	758	99	1192
NET INCOME ($million)				
Gross Income	**22.73**	**48.26**	**21.41**	**76.70**
Fishing	22.57	47.42	21.09	75.51
Salmon	11.17	42.62	9.39	64.92
Herring	7.90	0	7.30	0
Other	3.50	4.80	4.41	10.59
Packing & Other	0.16	0.84	0.31	1.19
Operating Expenses	**7.54**	**14.36**	**7.07**	**22.93**
Fuel, Oil, Grease & Food	1.33	4.28	1.16	5.54
Other Operating Exp	0.25	0.85	0.29	0.81
Wages (Excl. Captain)	5.97	9.23	5.62	16.58
Fixed Costs	**4.30**	**9.90**	**3.06**	**12.54**
Repairs/Maintenance	1.51	3.49	0.90	3.70
Net & Gear	1.24	2.86	0.86	3.54
Other Fixed Costs	1.54	3.56	1.29	5.31
Capital Charges	**1.28**	**5.52**	**1.16**	**8.44**
Interest Paid	0.34	1.97	0.17	3.14
Depreciation	0.95	3.55	1.00	5.30
Net Income	**9.61**	**18.48**	**10.12**	**32.78**
Captain Returns	5.37	11.63	4.80	18.10
Owner Returns	4.24	6.95	5.32	14.68

Appendix C

Definition of Financial Ratios

SALMON FLEET PROFILES, 1981 - 1990
DEFINITION OF FINANCIAL RATIOS[4]

EQUITY TO ASSETS.
Net fixed assets are the original cost of vessels, licences and equipment less accumulated depreciation (licences are not depreciated). Equity is the difference between net fixed assets and debt outstanding. The ratio of equity to assets indicates the balance between assets held and the financing of these assets through equity. If equity is a low percentage of assets held, difficulties may occur if earnings prove unsatisfactory.

PROFIT BEFORE TAX TO EQUITY.
Profits before tax are expressed as a percentage of shareholders equity. This measures the return the shareholders in the business have on their investment; that is, it measures the earning power of their equity. The ratio should be sufficiently high to provide for both dividends and funds for future growth. In certain cases, long-term private loans due to shareholders or affiliates are added into total equity. This ratio can serve as a valuable index in evaluating how well a company is doing relative to other companies.

PROFIT BEFORE TAX TO TOTAL ASSETS.
Profit before tax expressed as a percentage of total assets determines the return on the assets employed in the business. It measure the productivity of the assets.

INTEREST COVERAGE RATIO.
This ratio is calculated as income before interest and income taxes divided by annual interest expense. It measures whether enough income is being earned before taxes to cover interest charges. The interest coverage ratio tests the ability of a company to pay interest charges on its debt. For industrial firms, current year's interest should be covered at least three times by annual earnings.

PROFIT BEFORE TAX AS A PERCENTAGE OF SALES.
Profit after tax as a percentage of sales is an important measure of profitability. It is useful both for internal trend analysis and external comparisons; it effectively sums up in a single figure management's ability to run a business.

INTEREST EXPENSES AS A PERCENTAGE OF SALES.
For this ratio, total interest cost (on long-term and short-term debt) is expressed as a percentage of sales. This shows how much of the selling price is used to pay interest charges.

PROFIT BEFORE TAX AND INTEREST TO ASSETS.
This ratio measures the productivity of assets without regard to how they were financed or how much interest must be paid to creditors. It is an excellent measure of the efficiency of management.

[4]*Definitions taken from: Clarkson Gordon, Survey of the British Columbia Fish Processing Industry: Financial Results 1978-1982. Canadian Industry Report of Fisheries and Aquatic Sciences, No. 146, 1983, Appendix Two.*